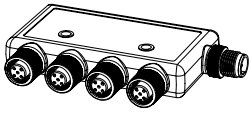
R90C-4K-MQ IO-Link Master/Modbus Converter

Quick Start Guide

This guide is designed to help you set up and install the R90C-4K-MQ IO-Link Master/Modbus Converter. For complete information on programming, performance, troubleshooting, dimensions, and accessories, please refer to the Instruction Manual at www.bannerengineering.com. Search for p/n 221301 to view the Instruction Manual. Use of this document assumes familiarity with pertinent industry standards and practices.



- Connects four IO-Link devices and provides access via Modbus RTU interface
- Rugged design; easy installation with no assembly or individual wiring required
- 5-pin M12 male quick disconnect connector
- Four 4-pin M12 female quick disconnect connectors
- Built-in indication for four IO-Link master ports
- Built-in indication for Modbus RTU connection status
- Rugged over-molded design meets IP65, IP67, and IP68

Overview

The R90C 4-Port Converter connects to four IO-Link devices and provides access to IO-Link data and functionality via a Modbus RTU connection.

Modbus registers allow for access to both IO-Link devices and their functions:

- Process Data In
- Process Data Out
- Connected device information
- ISDU data
- Discrete I/O configuration
- IO-Link events
- Data storage
- SIO mode

For more information, see p/n 221399 *IO-Link to ModBus Converter - Device Register Map*.

Status Indicators

The R90C-4K-MQ IO-Link Master/Modbus Converter has matching RGB LED indicators on both sides for each IO-Link device port to allow for installation needs and still provide adequate indication visibility. There is also an Amber LED indicator on both sides of the converter, which is specific to the Modbus communication.

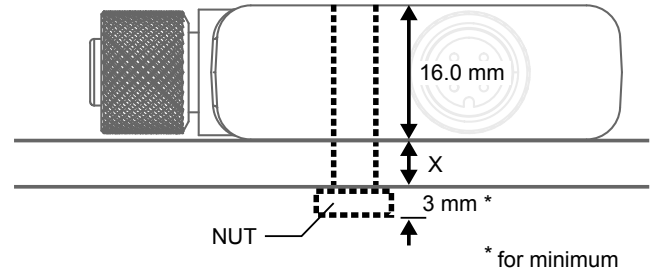
IO-Link Device Port 1, 2, 3, and 4 RGB LEDs	
Indication	**Status**
Off	Deactivated port
Flashing Green	Waiting for IO-Link device
Solid Green	IO-Link device is connected
Flashing Red	Validation Error
Solid Yellow	Signal high in SIO-mode
Solid Blue	Processor communication error

Modbus Communication Amber LED	
Indication	**Status**
Flashing Amber (4 Hz)	Modbus communications are active
Solid Amber (2 seconds) to Off	Modbus communications are lost after connection
Solid Amber (2 seconds) to Flashing Amber (4 Hz)	Modbus communications momentarily lost, but then reestablished
Solid Amber	Modbus communications are intermittent, or communications error occurs more frequently once every 2 seconds
Off	Modbus communications are not present

Mechanical Installation

Install the R90C 4-Port Converter to allow access for functional checks, maintenance, and service or replacement.

All mounting hardware is supplied by the user. Fasteners must be of sufficient strength to guard against breakage. Use of permanent fasteners or locking hardware is recommended to prevent the loosening or displacement of the device. The mounting hole (4.5 mm) in the R90C 4-Port Converter accepts M4 (#8) hardware. See the figure below to help in determining the minimum screw length.



Screw Length = 16.0 mm + “X” mm + 3 mm

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CAUTION: Do not overtighten the R90C 4-Port Converter's mounting screw during installation. Overtightening can affect the performance of the R90C 4-Port Converter.

Specifications

Voltage Input Range
18 V DC to 30 V DC

Input Power
24 V DC at 4 A

Output Power
24 V DC at 100 mA + 200 mA/port = 900 mA maximum

Supply Protection Circuitry
Protected against reverse polarity and transient voltages

Leakage Current Immunity
400 µA

Indicators
RGB1: IO-Link Port 1 Status
RGB2: IO-Link Port 2 Status
RGB3: IO-Link Port 3 Status
RGB4: IO-Link Port 4 Status
Amber: Modbus Communications

Connections
(4) Integral 4-pin M12 female quick disconnect
(1) Integral 5-pin M12 male quick-disconnect connector

Construction
Coupling Material: Nickel-plated brass
Connector Body: PVC translucent black

Vibration and Mechanical Shock
Meets IEC 60068-2-6 requirements (Vibration: 10 Hz to 55 Hz, 0.5 mm amplitude, 5 minutes sweep, 30 minutes dwell)
Meets IEC 60068-2-27 requirements (Shock: 15G 11 ms duration, half sine wave)

Environmental Ratings
For Indoor Use Only
IP65, IP67, IP68, UL Type 1

Operating Conditions
–40 °C to +70 °C (–40 °F to +158 °F)
90% at +70 °C maximum relative humidity (non-condensing)
Storage Temperature: –40 °C to +80 °C (–40 °F to +176 °F)

IO-Link Baud Rates
COM1: 4.8 kbps
COM2: 38.4 kbps
COM3: 230.4 kbps

Compliant Standards
IO-Link interface and System Specification v 1.1.2
IO-Link Test Specification v 1.1.2

Master Communication Protocol
RS485 – Modbus RTU

Digital Inputs (SIO [DI] Mode)
Input Current: 5 mA typical
ON Voltage/Current: 15 V DC minimum/5 mA minimum
OFF Voltage: 5 V DC maximum

Digital Outputs (SIO [DO] Mode)
On-Resistance: 120 mΩ typical, 250 mΩ maximum
Current Limit: 0.7 A minimum, 1.0 A typical, 1.3 A maximum
Off Leakage Current: -10 µA minimum, 10 µA maximum

Certifications

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